

THE PUBLIC'S HEALTH

Newsletter for Medical Professionals in Los Angeles County

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May 2004

West Nile Virus 2004: Mosquitoes Are Here; Infections in Los Angeles County Expected

Los Angeles County health department officials expect cases of West Nile Virus (WNV) infection this year after the virus spread to southern California in 2003 with three confirmed cases of the infection acquired within the region. Two of the three cases were meningitis acquired within Riverside and Imperial counties and one case of WNV fever was acquired in Los Angeles County. In addition to these human cases, several standard surveillance tools demonstrated that WNV is now established in our county. In 2003, 64 dead birds and 6 mosquito pools tested positive for WNV infection. Experts predict that in 2004 WNV will continue to spread north throughout the state.

For 2004, WNV activity arrived earlier than expected. Already, environmental surveillance has

Locally, dozens of dead birds found in the San Gabriel Valley have tested positive for WNV infection.

identified WNV in nine states and one human case has been reported (in Ohio). Locally, dozens of dead birds found in the San Gabriel Valley have tested positive for WNV infection. And beyond our county, WNV-infected dead birds have been found in Ventura and Orange counties. Since dead bird surveillance serves as an early warning signal of WNV activity and risk to humans, public health officials caution that human cases will be especially likely this year. In response, the five local mosquito abatement districts have stepped up mosquito control, surveillance, and

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Reporting of Select Non-Communicable Diseases and Conditions

While much is written about the need to report communicable diseases, there are several non-communicable diseases and conditions that healthcare professionals are also required to report as mandated by California law. For the past two years, a few of these non-communicable diseases have been listed on the final row of the Los Angeles County list of Reportable Diseases and Conditions (page 7) and include: Alzheimer's disease and related conditions, disorders characterized by lapses of consciousness, and pesticide-related illnesses. Since the steps necessary to report these non-communicable diseases differ from communicable diseases, and since many healthcare providers are unaware of the reasons underlying the need to file these reports, the following summarizes these unique reporting requirements.

Disorders characterized by lapses of consciousness (e.g., Alzheimer's disease) and pesticide-related illnesses should be reported to the health department.

unique reporting requirements.

Reporting cases with lapses of consciousness including Alzheimer's disease and related conditions

Individuals with conditions and illnesses that involve lapses of consciousness, including Alzheimer's disease and illnesses that involve impairment of sensory motor functioning, can pose tremendous risk to both themselves and others should they operate a motor vehicle. Accordingly, it is the responsibility of all health-

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CONTRIBUTORS TO THIS ISSUE:

Rachel Civen, MD, MPH
Medical Epidemiologist, Acute Communicable Disease Control
Eric S. Daar, MD
Chief, Division of HIV Medicine, Harbor-UCLA Medical Center
David E. Dassey, MD, MPH
Deputy Chief, Acute Communicable Disease Control
Patricio di Donato, MPH
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Annette Nitta, MD
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Caitlin Reed, MD
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Janet Scully, MPH
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Ben Techagaiciyawanis, MPH, CHES
Senior Health Educator, Acute Communicable Disease Control

West Nile Virus (from page 1)

educational activities. Our Public Health Laboratory is ready to provide human WNV testing. For testing information from neighboring jurisdictions (e.g., Long Beach and Orange County), please contact their respective health departments.

As of May 1, 2004, there have been no reports of human cases and no positive mosquito pools or sentinel chicken conversions within Los Angeles County or California.

Los Angeles County West Nile Virus Surveillance-2004

This year, surveillance for WNV and other arboviral encephalitis viruses (e.g., Saint Louis encephalitis and Western Equine encephalitis) will be increased. Locally, surveillance efforts concentrate on: 1) testing sentinel chicken flocks, 2) identifying and tracking mosquitoes that transmit the virus, and 3) diagnosing sick birds which are potential reservoirs. The first evidence of WNV in an area is most often a die-off of wild birds from the corvid family (e.g., crows and jays). When a problem is identified, mosquito abatement efforts can be targeted to the area. Surveillance for human disease is also carried out by investigating all cases of viral encephalitis, aseptic meningitis and acute flaccid paralysis syndrome and by offering specialized testing in the Public Health Laboratory.

However, both surveillance and future control of WNV depends upon joint cooperation among public health agencies, vector control districts, the medical community and the public at large since it is critical that suspected human cases and dead birds are promptly reported. Public health also relies upon individuals to eliminate water sources that encourage the breeding of mosquitoes.

Diagnosis of WNV

WNV belongs to a group of viruses called flaviviruses which include the viruses that cause Japanese encephalitis, Saint Louis encephalitis, dengue fever and yellow fever. Infection with flaviviruses is usually diagnosed by the presence of IgM in serum and/or CSF—however, diagnosis may be difficult in people who have already been infected with one of these viruses, due to cross-reacting antibodies. The IgM antibody capture enzyme-linked immunosorbent assay (MAC_ELISA) is the diagnostic testing method of choice because it is simple, sensitive, and applicable to serum and CSF samples. With prior approval, diagnostic testing is available free of charge for suspected human WNV cases through our Public Health Laboratory. WNV testing can be arranged by calling the Acute Communicable Disease Control Program at 213-240-7941. Testing will be prioritized for hospitalized individuals and persons evaluated in emergency rooms when WNV is the suspected etiology for encephalitis, aseptic meningitis, and acute flaccid paralysis syndrome (a condition which

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West Nile Virus (from page 2)

has clinical similarities to Guillain-Barré syndrome). WNV testing is also widely available through commercial laboratories.

WNV is transmitted by several different species of mosquitoes; more than 30 species infected with WNV have been identified in North America. Most people who are bitten by an infected mosquito experience mild or no symptoms. While the majority of transmission is through infected mosquitoes, the virus can also be transmitted from infected transplanted organs and blood products. Since June 2003, all blood donors are screened for WNV infection using an extremely sensitive nucleic acid test. In 2003, over 800 asymptomatic WNV-infected donors were detected, resulting

in their products being destroyed and not being used. CDC investigators have also reported two cases of transmission of WNV to laboratory workers working with WNV-infected animals. Investigations are ongoing concerning possible transmission in breast milk; however, because this method of transmission is especially unlikely and since the benefits of breast feeding are well-established, physicians should continue to strongly encourage breast feeding.

Most persons infected by WNV are asymptomatic. Only one in five will experience a mild illness known as "West Nile fever"—a self-limited febrile illness indistinguishable from dengue fever and other viral illnesses such as influenza. Symptoms usually occur within 5 to 15 days after being bitten and may include fever, headache, muscle aches, swollen lymph nodes and rash. About 1 in 150 persons infected with WNV will experience more severe neurologic illnesses such as aseptic meningitis, acute flaccid paralysis syndrome and encephalitis—characterized by brain swelling which causes lethargy, confusion, disorientation or coma, severe muscle weakness and paralysis. Treatment for WNV infection is supportive.

In 2003, West Nile virus (WNV) infection emerged as a disease of significant public health importance. By the end of the last season, WNV activity was identified in nearly all of the contiguous United States (46 states and the District of Columbia) and human cases were reported from 45 states—including California. Nationally, nearly 10,000 cases of WNV infection were reported to the Centers for Disease Control and Prevention (CDC) in 2003. 📄

Additional information about Los Angeles County mosquito-borne encephalitis surveillance including the submission of specimens and mosquito control is available by calling Acute Communicable Disease Control 213-240-7941 or by visiting: www.lapublichealth.org/acd/docs/wnvbroch.pdf

For questions about mosquito abatement:

Los Angeles County Districts:

- Antelope Valley Mosquito and Vector Control District (661) 942-2917
- Compton Creek Mosquito Abatement District (310) 639-7375
- Greater Los Angeles County Vector Control District (562) 944-9656
- Los Angeles County West Vector Control District (310) 915-7370
- San Gabriel Valley Mosquito and Vector Control District (626) 814-9466

For questions about West Nile virus in neighboring cities and jurisdictions, contact their respective health departments.

- City of Long Beach (562) 570-4000
- City of Pasadena (713) 475-5529
- Orange County (919) 245-2360
- Ventura County (805) 677-5110
- Riverside County (909) 358-5000
- San Bernardino County (909) 387-9147

To report dead birds or other animals with encephalitis (e.g., horses) contact:
Los Angeles County Department of Health Services
Veterinary Public Health Program
Toll free hotline: 1-877-747-2243
OR
West Nile Virus Dead Bird Surveillance Program
Division of Communicable Disease Control
California Department of Health Services
Toll free hotline: 1-877-WNV-BIRD (877-968-2473)

To report suspected human cases of West Nile virus infection or to arrange testing, call:

Acute Communicable Disease Control
213- 240-7941 (business hours, 8:00am - 5:00pm)
213-974-1234 (emergency operator, after hours and weekends)

Non-Communicable Disease Reporting (from page 1)

care professionals to notify the Health Department if they are aware of any patients that might present a threat if they operate a motor vehicle. As mandated by the California Code of Regulations (CCR, Title 17, Division 1, Chapter 4, § 2806), disorders characterized by lapses of consciousness are medical conditions that involve:

- (1) a loss of consciousness or a marked reduction of alertness or responsiveness to external stimuli; and
- (2) the inability to perform one or more activities of daily living (e.g., driving); and
- (3) the impairment of the sensory motor functions used to operate a motor vehicle.

Some examples of medical conditions that may progress to the level of functional severity that would require reporting include: Alzheimer's disease and related disorders, seizure disorders, brain tumors, narcolepsy, sleep apnea, as well as abnormal metabolic states (e.g., hypo- and hyperglycemia associated with diabetes). Alzheimer's disease and related disorders are defined as illnesses that damage the brain causing irreversible, progressive confusion, disorientation, loss of memory and judgment (CCR § 2802). Impaired sensory motor functions that would require reporting are defined as the inability to integrate seeing, hearing, smelling, feeling, and reacting with physical movement, such as depressing the brake pedal of the car to stop the car from entering an intersection with a green traffic light to avoid hitting a pedestrian crossing the street (CCR § 2808).

Since these reports are associated with ability to drive, cases are limited to patients 14 years of age or older (CCR § 2810). Other exemptions from reporting (CCR § 2812) include:

- (1) The patient's sensory motor functions are impaired to the extent that the patient is unable to ever operate a motor vehicle, or
- (2) The patient does not drive and never intends to drive, or

- (3) The healthcare provider has reported the patient's diagnosis previously, or the patient's records indicate that the diagnosis was reported previously, and since that report, the provider believes the patient has not operated a motor vehicle.

For full descriptions of these and other California Reporting Regulations, visit:
<http://ccr.oal.ca.gov/>

Healthcare providers are required to report cases of lapses of consciousness within 7 days of diagnosis. The preferred method for reporting cases is by completing the standard Los Angeles County Confidential Morbidity Report (CMR, available at: www.lapublichealth.org/acd/reports/Reporting%20Forms/CMR.pdf). Reports should include the name, address, date of birth, and diagnosis of the patient as well as the name, address, and phone number of the provider making the report. The Morbidity Unit forwards these reports to the California Department of Motor Vehicles (DMV) Driver's Safety Office. The DMV investigates these cases to determine if the patient's license to drive should be restricted or revoked.

Reporting cases of pesticide-related illnesses

The California Office of Environmental Health Hazard Assessment (OEHHA) receives and oversees reports of illnesses believed to be associated with pesticides. The mission of the OEHHA is to protect and enhance public health and the environment by scientific assessment of risks posed by hazardous substances. Reporting pesticide-related illnesses allows for the evaluation and potential elimination of some of these hazardous substances. According to California Health and Safety Code (§ 105200), any physician or surgeon who knows, or has reasonable cause to believe, that a patient is suffering from pesticide poisoning or any disease or condition caused by a pesticide is required to report that fact to the local health officer. Reports should be submitted within 24 hours by completing a "Pesticide

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Non-Communicable Disease Reporting (from page 5)

Illness Report" available at: www.oehha.ca.gov/pesticides/pdf/PIR_99.pdf and sent to the Los Angeles County Morbidity Unit (facsimile 888-397-3993).

For occupational cases of pesticide-related illnesses, physicians are also required within 7 days to send a copy of the "Doctor's First Report of Occupational Injury or Illness" to the local health officer and to the State Department of Industrial Relations. The form for these reports and mailing address are available at: www.oehha.ca.gov/pesticides/pdf/dlsrform5021.pdf

Questions about pesticide-related illness reporting can be directed to Dr. Louise Mehler (916) 445-4190 or Dr. Marylou Verder-Carlos (916) 324-4204 of the Department of Pesticide Regulation. For information about specific pesticides contact the Federal Pesticide Control Program (800) 858-7378. In addition, the California Poison Control System is a useful resource for product information (800) 222-1222. ☎

For more information on reporting of pesticide-related illnesses as well as links to all appropriate forms, visit:
www.oehha.ca.gov/pesticides/programs/Pestrpt.html
or call the California Poison Control System
1-800-222-1222

Pesticide-related Illnesses May Mask Chemical Terrorist Activity

With the continuing threat of terrorist activity in our nation, it is now especially important that healthcare providers are alert in identifying and quick to respond to chemically induced illnesses since it is possible that an assumed pesticide-related illness may be actually caused by a deliberate act of terrorism. Sarin, soman, and tabun are man-made chemical warfare agents classified as nerve agents. Nerve agents are the most toxic and rapidly acting of the known chemical warfare agents. They are similar to organophosphate pesticides in terms of how they work and what kinds of harmful effects they cause. However, nerve agents are much more potent than organophosphate pesticides.

The diagnosis of a nerve agent poisoned casualty must be made clinically on the basis of the presenting signs and symptoms (e.g., sudden loss of consciousness, seizures, apnea, and death). There is usually no time for laboratory confirmation. Nerve agents inhibit cholinesterase, an enzymes present in tissues and blood. There is a laboratory blood test to determine cholinesterase activity.

The occurrence of more than one case of apparent pesticide poisoning or a single case resulting from suspicious or unusual circumstances (i.e., poisoning without a known chemical exposure event) should prompt investigation for a possible criminal event. If you suspect an illness is due to nerve agents or any terrorist-associated cause, immediately call Dr. Cyrus Rangan, at (213) 240-7785, or the on-call medical toxicologist at (213) 974-1234

For more information about nerve agents and chemical terrorism preparedness, visit the CDC web site at: www.bt.cdc.gov/agent/agentlistchem-category.asp#nerve ☎

REPORTABLE DISEASES AND CONDITIONS
Title 17, California Code of Regulations (CCR), § 2500

It shall be the duty of every healthcare provider, knowing of or in attendance on a case or suspected case of any diseases or conditions listed below, to report to the local health officer for the jurisdiction where the patient resides. Where no healthcare provider is in attendance, any individual having knowledge of a person who is suspected to be suffering from one of the diseases or conditions listed below may make such a report. "Healthcare provider" encompasses physicians, surgeons, veterinarians, podiatrists, nurse practitioners, physician assistants, registered nurses, nurse midwives, school nurses, infection control practitioners, medical examiners, coroners, dentists and chiropractors.

Urgency Reporting Requirements:

- ☎ = Report immediately by telephone.
- ✉ = Report by mailing, telephoning or electronically transmitting a report within 1 working day of identification of the case or suspected case.
- ① = Report by telephone within 1 hour followed by a written report submitted by facsimile or electronic mail within 1 working day.
- ⑦ = Report within 7 calendar days from the time of identification by mail, telephone or electronic report.

REPORTABLE DISEASES

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| <ul style="list-style-type: none"> ⑦ Acquired Immune Deficiency Syndrome (AIDS) * ✉ Amebiasis ✉ Anisakiasis ☎ Anthrax ✉ Babesiosis ☎ Botulism: Infant, Foodborne, or Wound ☎ Brucellosis ✉ Campylobacteriosis ⑦ Chancroid * ⑦ Chlamydial Infections * ☎ Cholera ☎ Ciguatera Fish Poisoning ⑦ Coccidioidomycosis ✉ Colorado Tick Fever ✉ Conjunctivitis, Acute Infections of the Newborn, specify etiology ✉ Cryptosporidiosis ⑦ Cysticercosis ☎ Dengue ☎ Diarrhea of the Newborn, outbreaks only ☎ Diphtheria ☎ Domoic Acid Poisoning (Amnesic Shellfish Poisoning) ⑦ Echinococcosis (Hydatid Disease) ⑦ Ehrlichiosis ✉ Encephalitis, specify etiology: Viral, Bacterial, Fungal, Parasitic ☎ <i>Escherichia coli</i> O157:H7 Infections ✉ Foodborne Disease: <ul style="list-style-type: none"> ☎ 2 or more cases from separate households with same suspected source ⑦ Giardiasis ⑦ Gonococcal Infections * ✉ <i>Haemophilus influenzae</i>, Invasive Disease ☎ Hantavirus Infections ☎ Hemolytic Uremic Syndrome ☎ Hemorrhagic Fevers, Viral (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses) | <p>Hepatitis:</p> <ul style="list-style-type: none"> ✉ Hepatitis A ⑦ Hepatitis B, specify Acute or Chronic ⑦ Hepatitis C, specify Acute or Chronic ⑦ Hepatitis D (Delta) ⑦ Hepatitis Other, Acute ⑦ Human Immunodeficiency Virus (HIV) * ⑦ Kawasaki Syndrome (Mucocutaneous Lymph Node Syndrome) ⑦ Legionellosis ⑦ Leprosy (Hansen's Disease) ⑦ Leptospirosis ✉ Listeriosis ⑦ Lyme Disease ✉ Lymphocytic Choriomeningitis ✉ Malaria ✉ Measles (Rubeola) ✉ Meningitis, specify etiology: Viral, Bacterial, Fungal, or Parasitic ☎ Meningococcal Infections ⑦ Mumps ⑦ Non-Gonococcal Urethritis (report laboratory confirmed Chlamydia as Chlamydia) * ☎ Paralytic Shellfish Poisoning ⑦ Pelvic Inflammatory Disease (PID) * ✉ Pertussis (Whooping Cough) ☎ Plague, Human or Animal ✉ Poliomyelitis, Paralytic ✉ Psittacosis ✉ Q Fever ☎ Rabies, Human or Animal ✉ Relapsing Fever ⑦ Reye Syndrome ⑦ Rheumatic Fever, Acute ⑦ Rocky Mountain Spotted Fever <p>Rubella:</p> <ul style="list-style-type: none"> ⑦ Acute Rubella (German Measles) ⑦ Congenital Rubella Syndrome | <ul style="list-style-type: none"> ✉ Salmonellosis (other than Typhoid Fever) ☎ Scabies (Atypical or Crusted) * ☎ Scombroid Fish Poisoning ✉ Shigellosis ☎ Smallpox <p>Streptococcal Infections:</p> <ul style="list-style-type: none"> ✉ Outbreaks of any type ✉ Individual case in a food handler ✉ Individual case in a dairy worker ✉ Invasive Group A Streptococcal Infections including Streptococcal Toxic Shock Syndrome and Necrotizing Fasciitis * (Do not report individual cases of pharyngitis or scarlet fever.) ⑦ <i>Streptococcus pneumoniae</i>, Invasive * ✉ Swimmer's Itch (Schistosomal Dermatitis) ✉ Syphilis * ⑦ Tetanus ⑦ Toxic Shock Syndrome ⑦ Toxoplasmosis ✉ Trichinosis ✉ Tuberculosis * ☎ Tularemia ✉ Typhoid Fever, cases and carriers ⑦ Typhus Fever <p>Varicella:</p> <ul style="list-style-type: none"> ☎ Varicella, Fatal Cases ⑦ Varicella, Hospitalized Cases (Do not report cases of herpes zoster/shingles.) <ul style="list-style-type: none"> ✉ <i>Vibrio</i> Infections ✉ Water-associated Disease ☎ Yellow Fever ✉ Yersiniosis <p>☎ OCCURRENCE OF ANY UNUSUAL DISEASE</p> <p>☎ OUTBREAKS OF ANY DISEASE</p> |
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Notification Required of Laboratories (CCR § 2505)

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| <ul style="list-style-type: none"> ① Anthrax +■ ① Botulism ■ ① Brucellosis +■ ✉ Chlamydial Infections * ✉ Cryptosporidiosis ✉ Diphtheria + ✉ Encephalitis, arboviral ① <i>Escherichia coli</i> O157:H7 or Shiga toxin-producing <i>E. coli</i> O157:NM + ✉ Gonorrhea * ✉ Hepatitis A, Acute Infections, by IgM antibody test or positive viral antigen test | <p>Hepatitis B:</p> <ul style="list-style-type: none"> ✉ Acute Infections, by IgM anti-HBc antibody test ✉ Surface Antigen Positivity (specify gender) ① Hemorrhagic Fevers, Viral (e.g., Crimean-Congo, Ebola, Lassa, and Marburg viruses) ■ ⑦ Human Immunodeficiency Virus (HIV) * ✉ Listeriosis + ✉ Malaria + ✉ Measles (Rubeola), Acute Infections, by IgM antibody test or positive viral antigen test ① Plague, Animal or Human +■ | <ul style="list-style-type: none"> ✉ Rabies, Animal or Human ✉ Salmonella + ① Smallpox ■ ⑦ <i>Streptococcus pneumoniae</i>, Invasive * ✉ Syphilis * ✉ Tuberculosis +* ① Tularemia +■ ✉ Typhoid and other <i>Salmonella</i> Species + ✉ <i>Vibrio</i> Species Infections + |
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* Reportable to the Los Angeles County Department of Health Services.

+ Bacterial isolates and malarial slides must be forwarded to the Los Angeles County DHS Public Health Laboratory for confirmation. Healthcare providers must still report all such cases separately.

■ Laboratories receiving specimens for the diagnosis of these diseases must **immediately** contact the California Department of Health Services; for bacterial testing call 510-412-3700, for viral testing call 510-307-8575. For botulism testing, contact Acute Communicable Disease Control at 213-240-7941.

Non-communicable Diseases or Conditions

- ⑦ Alzheimer's Disease and Related Conditions (CCR § 2802, § 2806, § 2810)
- ⑦ Disorders Characterized by Lapses of Consciousness (CCR § 2806, § 2810)
- ✉ Pesticide-Related Illnesses (Health and Safety Code, § 105200)

* For questions regarding the reporting of HIV/AIDS, STDs, or TB, contact their respective programs:

HIV Epidemiology Program
 213-351-8516
www.lapublichealth.org/hiv/index.htm

STD Program
 213-744-3070
www.lapublichealth.org/std/index.htm

TB Control Program
 213-744-6271 (for reporting) 213-744-6160 (general)
www.lapublichealth.org/tb/index.htm

To report a case or outbreak of any disease contact the Communicable Disease Reporting Syst
Tel: 888-397-3993 • Fax: 888-397-3778



ANTIBIOTIC RESISTANCE INFORMATION CORNER

This month we present two articles that show the dangers of antibiotic overuse and how these dangers can be altered with a change in empiric antibiotics.

Outbreak of *Clostridium difficile* Infection in a Long-Term Care Facility: Association with Gatifloxacin Use

R. Gaynes, D. Rimland, E. Killum, H. K. Lowery, T. M. Johnson II, G. Killgore, and F. C. Tenover. Clin Infect Dis 2004; 38:640-5.

This outbreak investigation was conducted to determine the cause of an increased rate of *Clostridium difficile*-associated diarrhea (CDAD) in a long-term care facility. Results of a case-control study showed that the increase of CDAD cases was associated with a formulary change from levofloxacin to gatifloxacin. The rate per 1,000 patient-days increased from 0.44 for the study period of levofloxacin use to 1.32 for the study period of gatifloxacin substitution ($p < .01$). The rate of CDAD decreased to 0.5 cases per 1,000 patient-days after a change back to levofloxacin therapy. The authors note that risk factors associated with CDAD in a long-term care facility may differ from other settings such as acute care hospitals.

Clindamycin, Cephalosporins, Fluoroquinolones, and *Clostridium difficile*-Associated Diarrhea: This is an Antimicrobial Resistance Problem

D. N. Gerding. Clin Infect Dis 2004; 38:646-8.

The following editorial commentary reviews a historical timeline of CDAD risk associated with clindamycin and cephalosporin treatment leading up to the increased but variable CDAD risks associated with fluoroquinolone use. Studies have suggested, but have not proven, the association of CDAD with the disruption of colonic flora by anaerobic activity of specific antimicrobials. However, the author suggests that additional factors of fluoroquinolone resistance in *C. difficile* and proliferation of these specific clones in specific hospitals are the critical events leading to CDAD outbreaks. As cited in Gaynes et al., the success of decreasing CDAD rates by substitution of related fluoroquinolones (gatifloxacin to levofloxacin) remains to be seen elsewhere.

The above article and editorial commentary are available at: www.journals.uchicago.edu/CID/journal/contents/v38n5.html

Clinical practice guidelines and other resources are available online at:

- Infectious Diseases Society of America - www.idsociety.org
- Clinical Practice Guidelines - www.journals.uchicago.edu/IDSA/guidelines/
- The California Medical Association (CMA) Foundation - www.aware.md/resource/index.asp
- Clinical Practice Guidelines Compendium (Pediatric and Adult) - www.aware.md/clinical/clinical_guide.asp
- Centers for Disease Control and Prevention - www.cdc.gov/drugresistance/community/
- Los Angeles County Department of Health Services Acute Communicable Disease Control Program - www.lapublichealth.org/acd/antibio.htm



HIV-1 Superinfection

Recently there has been interest in the phenomena of HIV-1 superinfection (a form of dual infection) and its impact on HIV transmission and disease progression. HIV-1 dual infection is the presence of two different strains of HIV-1 in a single person and can be the result of:

- **coinfection** (when an HIV-1-uninfected person is infected by more than one person within a short interval of time) or
- **superinfection** (when a person with established HIV-1 infection is re-infected by the virus of a new source partner).

The best evidence for the HIV-1 superinfection would be an individual who has documented HIV-1 infection that can be proven to be molecularly distinct from an HIV-1 strain that emerges at a later date. The most definitive way to distinguish superinfection from coinfection is to link the new strain of HIV-1 to a new source partner.

Documentation of superinfection is complex and requires that a chronically infected individual be followed in a research setting prior to the emergence of the new strain of HIV-1. The first well documented cases of superinfection were described in 2002.²⁻⁴ Altfeld and colleagues described an individual with primary HIV-1 infection who started and then stopped antiretroviral therapy with persistently undetectable levels of HIV-1 RNA off treatment.² After months of follow-up, the person experienced viral rebound with a distinct virus that was not detected by highly sensitive molecular methods at any earlier time. Moreover, the researchers demonstrated that strong HIV-1-specific immune responses were present for the original virus, as well as for the second strain, even prior to superinfection. The inability of the host to prevent, or even control the second strain of HIV-1, despite pre-existing immune responses, raises major concerns regarding vaccine development. In addition, these data demonstrated that superinfection can have an

To avoid HIV superinfection, HIV-infected subjects should continue to be counseled regarding the importance of safe sex.

adverse impact on a chronically infected person. There have since been several other cases reported of probable superinfection.^{5,6}

Several researchers have evaluated subjects in cohort studies in order to systematically assess both the frequency and pathogenic consequences of superinfection. One set of researchers reported no cases of superinfection among a large number of subjects in care⁷ while another also reported no evidence of superinfection among a cohort of intravenous drug users.⁸ More recently, 3 of 73 (4.1%) subjects in a San Diego and Los Angeles cohort of individuals followed from the time of primary HIV-1 infection were reported to have evidence of superinfection.⁹ Another group retrospectively assessed the frequency of coinfection and superinfection in a subset of subjects and found that 5 of 64 had dual infection, one of which (1.6%) was thought to have superinfection.¹⁰ These studies provide a hint as to the minimal prevalence of superinfection among at-risk individuals. But more importantly, the research also demonstrated that the emergence of a second virus was often associated with an increase in HIV-1 RNA, a decline in CD4 T-cells and with disease progression.

The overall prevalence of superinfection remains largely speculative; however, emerging data supports that it does occur among a small proportion of HIV-1-infected persons and is likely to be underestimated due to the absence of the molecular testing that is necessary to confirm such an event. These findings have important implications for vaccine development and may provide insight into the immunopathogenesis of HIV-1 disease. In addition,

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HIV-1 Superinfection (from page 8)

superinfection almost certainly has significant ramifications for those living with HIV-1 disease. These data suggest that acquiring a second virus may have important pathogenic consequences, possibly as a result of the new strain being more virulent; being resistant to antiretroviral drugs, or poorly controlled by existing HIV-1 immune responses. Consequently, HIV-1-infected subjects

should continue to be counseled regarding the importance of safe sex in order to avoid exposure to a host of sexually transmitted infections. In addition, counseling should describe the risk of exposure to the client and/or their HIV-1-infected partners to a new strain of HIV-1, an event that will almost certainly go undetected but could be highly detrimental to the health of one or both of the individuals. ¶

References:

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***Mycobacterium gordonae*: Be aware of unusual clinical patterns**

Mycobacterium gordonae, a species of nontuberculous or atypical mycobacteria, is ubiquitous in the environment and frequently found in water.¹ *M. gordonae* rarely causes clinical illness.² Mycobacterium tuberculosis and *M. gordonae* are indistinguishable on sputum smear alone, because all species of mycobacteria may appear as acid-fast bacilli (AFB). Culture can reliably distinguish between these organisms, but it may take weeks for results to become available. A recent pseudo-outbreak (the presence of positive laboratory results in the absence of clinical disease) of *M. gordonae* required prompt public health intervention.

In January 2004, a staff physician at an outpatient tuberculosis clinic in Hollywood noticed an unusually high number of sputum smears heavily positive for AFB from patients with a low clinical suspicion of active tuberculosis (TB). Later, the sputum cultures all grew *M. gordonae*. The clinical laboratory confirmed that a large number of AFB smear-positive sputum samples yielding *M. gordonae* came from this clinic, and that no other clinic had a similar unusual number of such specimens. This suggested that the source was in the clinic itself, rather than contamination in the laboratory. An investigation at the clinic revealed that most of the smear-positive *M. gordonae* samples had been induced, thus implicating the sputum induction equipment. Clinic staff determined that the few remaining smear-positive specimens had also been induced, but were mislabeled as expectorated. The clinic used a standard nebulizer with a multi-use chamber containing hypertonic saline. The chamber was being cleaned weekly, but there was no written cleaning protocol available to clinic staff. Samples from the chamber were 2+ to 3+ AFB smear-positive, and cultures later grew *M. gordonae*, confirming that the machine could have been the source of the pseudo-outbreak.

There have been many nosocomial pseudo-outbreaks of nontuberculous mycobacteria reported in

In January 2004, a staff physician at an outpatient tuberculosis clinic in Hollywood noticed an unusually high number of sputum smears heavily positive for AFB from patients with a low clinical suspicion of active tuberculosis (TB).

the literature. Because of their thick cell wall, mycobacteria are more resistant to killing by standard disinfectants than other pathogenic organisms, and they frequently reside in durable biofilms in water pipes and storage tanks.³ The sources of contamination in prior pseudo-outbreaks have included bronchoscopes, endoscopes, refrigerated fountains, ice machines, equipment washing machines, and laboratory solutions.⁴⁻⁸ However, no previous studies have reported a pseudo-outbreak of nontuberculous mycobacteria in an outpatient TB clinic.

Several adverse outcomes of misidentifying patients with nontuberculous mycobacteria as smear-positive for presumptive TB were observed in this pseudo-outbreak. Four patients were given unnecessary TB medications, two were hospitalized for more than a week to evaluate them for reactivation of prior TB disease, four were unable to work for at least one month because they were placed on home isolation, one patient's spouse was unable to work in a child care setting, and several contact investigations were initiated. These cases caused unnecessary utilization of public health resources for clinic visits, directly observed therapy, and contact investigation. Other possible adverse outcomes for patients include side effects of TB medications and social stigma. Clinical follow-up of all the patients involved revealed no changes in their symptoms, signs, or radiographic findings. All patients remained well and none were later diagnosed with mycobacterial disease on repeat smear and culture of expectorated sputum samples.

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Mycobacterium gordonae (from page 10)

After removing the contaminated nebulizer machine from use and changing the management of the patients involved, a review of clinical protocols was initiated. Recommendations included: a review of medical indications for ordering sputum induction, an emphasis on meticulous labeling of clinical specimens, a change in methods of cleaning sputum induction equipment, implementation of revised infection control policies and practices, and an effort to replace multi-use chamber nebulizer machines with a single-use disposable device. Follow-up investigation will include genotyping (to confirm that the pseudo-outbreak isolates are from the same strain) and post-intervention surveillance of sputum smears and cultures for *M. gordonae*.

This case points out the importance of noticing unusual patterns in clinical data and rigorously adhering to infection control measures. Rapid identification of the *M. gordonae* pseudo-outbreak led to appropriate intervention and prevented further cases of mistaken identity of this acid-fast bacillus. In addition, the intervention enabled the healthcare providers to reassess infection control practices and implement a quality assurance protocol. ☞

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Clarification of Tuberculosis Reporting, Los Angeles County

In the January 2004 issue of **The Public's Health**, the standard tuberculosis (TB) reporting form, TB Confidential Morbidity Report (CMR), was included with instructions on its use. For all hospitalized cases, state law requires the reporting of an individualized written discharge plan approved by the county health department (the Tuberculosis Control Program) prior to discharge. Because additional patient-specific information is required to assess the written discharge plan, it is recommended that the "Gotch Forms" (also known as "Hospitalized Patient Report, H-803" and "Hospital Discharge Approval Request, H-804") be used instead of the TB CMR to report hospitalized patients and to record the post-hospital plan for treatment and follow-up.

All of these forms can be downloaded from the Los Angeles County Tuberculosis Control Program web site at: www.lapublichealth.org/tb/tbcmr.htm.

For more information or questions, please call 213-744-6271. ☎

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THE PUBLIC'S HEALTH

Newsletter for Medical Professionals in Los Angeles County



COUNTY OF LOS ANGELES
DEPARTMENT OF HEALTH SERVICES
Public Health
313 North Figueroa Street, Room 212
Los Angeles, California 90012

Selected Reportable Diseases (Cases)¹ - December 2003

| Disease | THIS PERIOD Dec 2003 | SAME PERIOD LAST YEAR Dec 2002 | YEAR TO DATE - DEC | | YEAR END TOTALS | | |
|---------------------------------|-------------------------|--------------------------------------|--------------------|--------|-----------------|--------|--------|
| | | | 2003 | 2002 | 2002 | 2001 | 2000 |
| AIDS ¹ | 188 | 107 | 2,590 | 1,719 | 1,719 | 1,354 | 1,648 |
| Amebiasis | 11 | 7 | 128 | 102 | 102 | 139 | 109 |
| Campylobacteriosis | 92 | 74 | 1,092 | 1,067 | 1,067 | 1,141 | 1,273 |
| Chlamydial Infections | 2,880 | 3,011 | 35,840 | 34,680 | 34,680 | 31,658 | 30,642 |
| Encephalitis | 2 | 3 | 40 | 61 | 61 | 41 | 49 |
| Gonorrhea | 678 | 703 | 7,791 | 7,540 | 7,540 | 7,468 | 7,212 |
| Hepatitis Type A | 31 | 32 | 377 | 438 | 438 | 542 | 839 |
| Hepatitis Type B, Acute | 5 | 2 | 56 | 29 | 29 | 44 | 65 |
| Hepatitis Type C, Acute | 0 | 1 | 0 | 3 | 3 | 1 | 28 |
| Measles | 0 | 0 | 0 | 0 | 0 | 8 | 5 |
| Meningitis, viral/aseptic | 83 | 34 | 1,094 | 466 | 466 | 530 | 491 |
| Meningococcal Infections | 7 | 4 | 33 | 46 | 46 | 58 | 53 |
| Mumps | 1 | 5 | 12 | 16 | 16 | 17 | 29 |
| Non-gonococcal Urethritis (NGU) | 84 | 82 | 1,309 | 1,256 | 1,256 | 1,343 | 1,575 |
| Pertussis | 51 | 26 | 140 | 170 | 170 | 103 | 102 |
| Rubella | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| Salmonellosis | 66 | 136 | 1,018 | 956 | 956 | 1,006 | 990 |
| Shigellosis | 60 | 130 | 782 | 974 | 974 | 684 | 849 |
| Syphilis, primary & secondary | 27 | 29 | 437 | 355 | 355 | 181 | 136 |
| Syphilis, early latent (<1 yr.) | 22 | 28 | 360 | 348 | 348 | 191 | 194 |
| Tuberculosis | 209 | 202 | 953 | 1,021 | 1,021 | 1,046 | 1,065 |
| Typhoid fever, Acute | 1 | 3 | 16 | 33 | 33 | 17 | 21 |

1. Case totals are provisional and may vary following periodic updates of the database.

Data provided by DHS Public Health programs: Acute Communicable Disease Control, HIV/Epidemiology, Sexually Transmitted Diseases, and Tuberculosis Control.